S.T.E.M. Partnership in Process
Collaborating Across Organizations
Identifying Science, Technology, Engineering and Math (STEM) Resources to Support TRIO Programs

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Panel Introduction

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note: talk & resources online

http://kicp.uchicago.edu/COE
outline

• session goals
• introduction: partnerships
• TRIO guidelines alignment
• why work with STEM researchers
• why STEM researchers are interested in TRIO
• case studies
• discussion: partnerships encountered - strengths & weaknesses
• break out sessions:
  - partnership inventory: what you bring to the table & need
  - potential partners: identification and cultivation strategy
• Q&A
workshop goals

- review proven collaborative partnership strategies
- **create your partnership inventory**
- **design an individualized partnership cultivation strategy**
- discuss and evaluate the strengths and limitations of different partnership options
partnerships
key features

• mutually beneficial
• mutual respect
• good communication
• in for the long haul
red flags

• in it for the money
• conflicting agenda
• last minute (proposal due tomorrow)
it takes effort

• do your homework
• build relationships
what does it mean to work with a collaborative partner?

• create a mutually beneficial relationship/meeting common goals
• must result in efficient uses of resources and cost savings
• collaborations have life cycles
• know your organization, your constituency and your goals
• define the collaboration clearly and tie it to goals and objectives
• pursue relationships that are based on trust and open communication
alignment with Trio guidelines

there is no magic collaboration bullet...

- our process for identifying and establishing partnerships begins with
  1. reviewing our Trio plan of operation
  2. understanding/integrating the college readiness benchmarks
- ID partnership opportunities/areas of need
- continuous review and updates
why work with STEM researchers?

people with expertise & passion

resources

networks
the benefits of working in partnership with a researcher/research institute

- they know what is needed to have students be ready for any type of research (or any type of task that requires real critical thinking)
  And… they know how to get students to that place

- they are able to bring in the resources you may not have within your program

- they seem to know everybody and anybody, not only for the research project, but also for other resources to help your students

- they have patience and they have patience with students

- great on the student resume and great with student letter of recommendations and/or personal statements
why STEM researchers are interested in Trio

experience/skill building (teacher/scholars)

recruitment

funding
funding

Merit Review Criteria

#1 what is the intellectual merit of the proposed activity?

#2 what are the broader impacts of the proposed activity?

NSF values the advancement of scientific knowledge and activities that contribute to the achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

case studies/it pays off

- Pasadena City College/ Oak Crest

- Space Explorers: OSP-Trio/Department Astronomy & Astrophysics
Case Study
Pasadena City College/Oak Crest

partner - Oak Crest Institute (Environmental Chemistry)
partner in previous successful Trio grant application - time constraints prevented acting on
current grant partnered again- resulting in this program

program - Trio student research and prep + high school teacher professional development
worked with our high school teachers and Oak Crest Researchers to establish pre-
research summers

second or third-summer students worked on research projects they developed and then tested at the research lab.

students presented to all researchers at the Institute

impacts
all the non-cognitive skills such as resiliency, self-control, self-regulation, persistence, academic confidence, teamwork, organizational skills, creativity, and communication skills were developed throughout the summer

also Engineering Innovations/field experiences during the summer
Space Explorers
(since 1991)

partnership
Office of Special Programs/Trio and
Department of Astronomy & Astrophysics

1991

2015
Space Explorers

Science enrichment program for urban youth

• multi-year commitment
  - ~25 students/yr
  - ave. 3 yrs in program
  - over **100** contact hours/yr
    • weekly 2 hr lab
    • residential science institutes: 3-day winter & week-long summer
    • enrichment activities (e.g. Adler, college tour…)
  - 10-12 scientists/yr
  - one full time grad student RA

• goals:
  – success high school, college and beyond
  – kindle & sustain interest, prepare for STEM (science, technology, engineering & mathematics) careers
  – teacher/scholars

part of the department culture
network example
2015 spring college tour
connections @

Harvard, Yale, Princeton, MIT, Rutgers, U. Wisconsin Madison
some impact numbers

- **25** graduate student teacher/scholars (full year)
- **112** instructors in residence at Yerkes Observatory
- **438** Space Explorer Program participants

- Space Explorers high school graduates (e.g., since 2002 N= 86)
  - **100%** to college
  - **59%** STEM Majors
  - **8%** Physical Science Majors
evaluation
did it work? can we improve?

• post Yerkes institute surveys
• instructor focus groups/feedback
• tracking - students & lead instructors/RA’s
• gut

• initial findings 25 year summative & formative evaluation
text

increased
- resiliency (tenacity, persistence and grit)
- self-control and self-regulation
- academic confidence, self-efficacy & pride
- teamwork and collaborative skills
- organizational and communication skills
Discussion partnerships encountered
Break Out Session

**partnership inventory**: what you bring to the table & need
break out plan

- groups
- 5min discussion
- scribe records
- 1 min report out
Partnership Inventory Report Out

what bring  |  what need
Break Out Session

potential partners:
identification and cultivation strategy
break out plan

- groups
- 5min discussion
- scribe records
- 1 min report out
Potential Partners Report Out

who | how
partnership possibilities: think diverse

- local environmental organizations
  - [List of environmental agencies in the United States](https://en.wikipedia.org/wiki/List_of_environmental_agencies_in_the_United_States)
- universities and colleges
- hospitals and clinics
- local and regional businesses and business organizations (Chambers of Commerce)
- municipal government
- conservation commissions, planning boards, other municipal groups
- historical societies
- state agencies
- municipally owned forests and/or parks
- service/social organizations, fraternities/sororities
- student run organizations
- museums, nature centers and educational non-profit organizations
- other community based organizations (Junior Achievement)
strategies supporting long-term, mutually successful collaborative partnerships

- be flexible
- communicate from the potential partner's point of view
- clarify roles and expectations and early
- ask more than you tell
- listen
- remember actions speak louder than words
- be image conscious and enthusiastic
- work towards sustainability: Stay in touch, follow-up and express appreciation
- establish a regular and on-going communication/meeting schedule
- share information with an emphasis on evaluation and outcomes
reminder:
talk & resources
online
http://kicp.uchicago.edu/COE